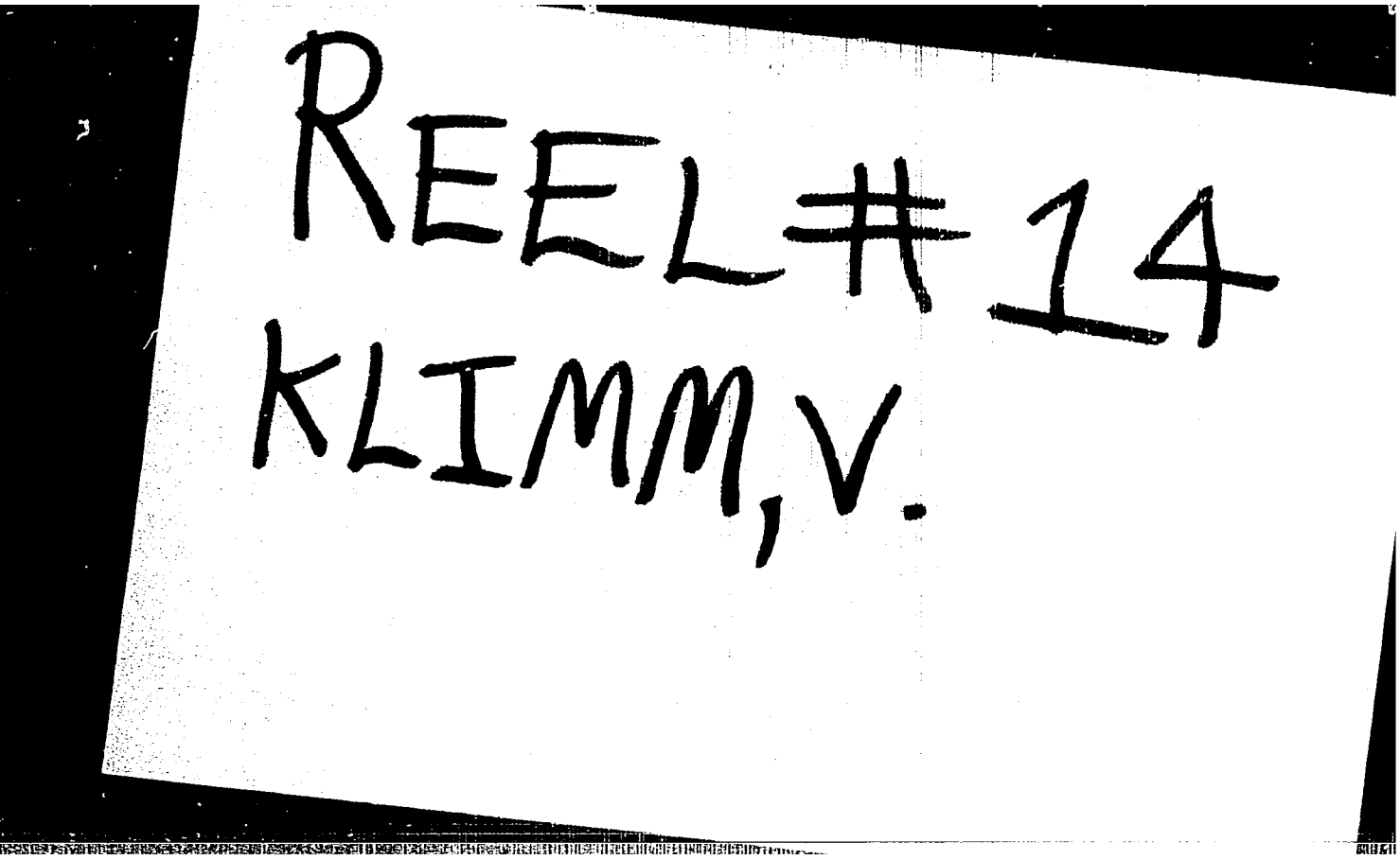

1/2 015 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--EVALUATION OF METHODS OF INTERNAL USE OF FLUORIDE FOR THE PURPOSE OF COLLECTIVE PROPHYLAXIS OF DENTAL CARIES -U-

AUTHOR-(02)-KYUNTSEL, V., KLIMM, V.

COUNTRY OF INFO--USSR

SOURCE--STOMATOLOGIYA, 1970, VOL 49, NR 3, PP 13-20

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DENTAL CARIES, FLUORIDE, PEDIATRICS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--UR/0511/70/049/003/0013/0020

PROXY REEL/FRAME--1998/0100

CIRC ACCESSION NO--AP0120800

UNCLASSIFIED

2/2 015 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120800

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SUMMARY. BASING UPON STATISTICAL INVESTIGATIONS THE AUTHORS COMPARE THE RESULTS OF USING FLUORIDE CONTAINING TABLETS WITH THE RESULTS OF FLURODIDATION OF DRINKING WATER. THE LATTER IN ALL RESPECTS IS MORE ADVANTAGEOUS. AFTER AN 8 YEAR LONG ADDITION OF FLUROIDE (UP TO 1 PPM) TO THE DRINKING WATER THE AUTHORS OBSERVED A REDUCTION OF THE, INCIDENCE OF DENTAL CARIES IN CHILDREN, AGE 6-10 AND 11-15 YEARS, BY 74 AND 43 PER CENT RESPECTIVELY. ANALOGOUS DATA WERE ESTABLISHED IN THE MILK BITE IN CHILDREN, AGED 3-6 AND 7-10 YEARS. THE EMPLOYMENT OF FLUORIDE CONTAINING TABLETS DOES NOT YIELD SUCH GOOD RESULTS. THE POSSIBILITY OF ELABORATING A SYSTEM OF COMPLEX COMBAT WITH DENTAL CARIES IS DISCUSSED. FACILITY: KLINIKA TERAPEVTICHESKOY STOMATOLOGII UNIVERSITETA IM. KARLA MARKSA.

UNCLASSIFIED

USSR UDC: 532.526

KLIMNYUK, Yu. I., KOMAROV, A. P.

"Approximate Method of Calculating the Parameters of the Region of Interaction Between a Normal Shock and a Turbulent Boundary Layer"

Tr. Kuybyshev. aviats. in-t (Works of the Kuybyshev Aviation Institute), 1971, vyp. 35, pp 126-132 (from RZh-Mekhanika, No 9, Sep 72, Abstract No 9B839)

Translation: When a normal compression shock interacts with a boundary layer, a λ-system of shocks is formed which consists of the main normal shock, and leading and trailing oblique shocks. In this paper, the conventional empirical relation between the pressure drop due to detachment and the Mach number is used together with the expression for the oblique compression shock to calculate the characteristics of the region of interaction: the angle of flow deflection in the leading oblique shock, the Mach number behind the leading and trailing shocks, the coefficient of restitution of total pressure behind the region of interaction. The additional empirical relation between the height of the region of interaction and the thickness of displacement in the undisturbed flow was used to calculate the relative thickness of displacement behind the region of interaction as well. Bibliography of 11 titles. V. Ya. Borovoy.

1/1

USSR

KLIMNYUK, Yu. I., KOMAROV, A. P.

"Approximate Method of Calculating Characteristics of a Flat, Semi-Free Wake"

Tr. Kuybyshev. Aviats. In-t. [Works of Kuybyshev Aviation Institute], 1971, No 35, pp 133-142, (Translated from Referativnyy Zhurnal, Mekhanika, No 10, 1972, Abstract No 10 B469, by L. V. Nosachev).

Translation: A method is suggested for calculating a semi-free wake in a subsonic flow with a longitudinal pressure gradient for calculation of integral flow characteristics beyond a straight compression jump in the area of its interaction with the boundary layer on a plate and analysis of the flow in a two-row compressor blade set if the wake from a blade of the first row strikes a blade of the second row. As the integral thicknesses of the semi-free wake are determined in the cross section in question, the influence of the boundary layer arising on the limiting wall is ignored and it is considered that the parameters of the wake in the initial cross section, as well as the change in velocity at the external boundary of the wake (in the main flow) are known. 8 Biblio. Refs.

1/1

USSR

UDC: 621.51-226.2:533.6.011.7

Klimnyuk, Yu. I.

"Influence of Viscosity on Characteristics of Compressor Arrays in Supersonic Flow Modes"

Kazan', Izvestiya Vysshikh Uchebynkh Zavedeniy, Aviatsionnaya Tekhnika, No 1, 1972, pp 78-86.

Abstract: This article studies the flow of a supersonic stream of a viscous gas around a flat compressor blade array. A method is presented for calculating the characteristics of the entry sector of flat compressor arrays, and it is shown that the viscosity has little influence on the characteristics of the input sector of the arrays operating with disconnected head wave.

The influence of viscosity is studied on the characteristics of a diffuser in a flat compressor array, operating at supersonic speeds with disconnected headway. It is demonstrated that the viscosity places a limitation on permissible velocities and rotation of the flow in a supersonic compressor array.

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USSR

UDC 533.9.01

ASHARYAN, E. A., and KLIMONTOVICH, YU. L.

"On the Theory of Spectral Line Broadening by Electrons in a Nonequilibrium Plasma"

Leningrad, Optika i Spektroskopiya, Vol 34, No 1, Jan 73, pp 198-200

Abstract: In a previous article the authors calculated the spectral emission line width of atoms in a partially ionized plasma resulting from the interaction of the radiating atom with electrons that are subject to a nonequilibrium pulse distribution, with only the resonant transition $n \rightarrow m$ being taken into account. The present article considers the same problem and calculates the line width of the transition $n \rightarrow m$ with allowance for every possible transition from the levels n and m. The line width is now determined by the spectral function of fluctuations of the electric field $(\delta E \delta E)_{\omega}$ not only on the resonant frequency ω_{nm} but also on all frequencies of possible transitions from the levels n and m.

1/1

USSR

KLIMONTOVICH, Yu. L. (Moscow State University)

"The Boltzmann H-Theorem for an Imperfect Gas"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; July, 1972; pp 159-6

ABSTRACT: An expression is derived in the pair collision approximation for the entropy density S of a nonequilibrium, imperfect gas. In the same approximation on the basis of the Boltzmann kinetic equation an expression for the Boltzmann H-function is found for an imperfect gas (Yu. L. Klimontovich; ZhETF, 60, 1353, 1971). In the equilibrium state the expression for S is given by the first two terms of the virial expansion of entropy with respect to density.

The article includes 28 equations. There are 12 bibliographic references.

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USSR UDC: None

KLIMONTOVICH, Yu. L.

"Integral Equation for Conjugate Correlation Functions of Dense, Gases and Plasmas"

Moscow, Pis'ma v Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, No 8, 20 April 1972, pp 495-497

Abstract: The principal problem in the static equilibrium theory of dense gases and plasmas is the determination of conjugate correlation functions. At the present time, three equations involving such functions and corresponding to various approximations are used. However, the method of justifying these approximations is too formal and does not make clear the physical meaning of the assumptions involved in deriving the equations. The author of the present letter therefore proposes other integral equations for the correlation functions of dense gases and plasmas whose physical significance is clear. He finds that the expression he finally obtains is valid in the zero density approximation as well as in the first approximation for plasma parameters. He is connected with the M. V. Lomonosov Moscow State University.

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USSR

KLIMONTOVICH, Yu. L. (Moscow State University)

"Kinetic Equations for a Clasical Nonideal Plasma"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; May, 1972; pp 1770-81

Abstract: The Boltzmann, Landau, Balescu — Leonard equations for a plasma do not take into account sufficiently particle interaction within the framework of the respective models. These equations, for example, lead to the law of conservation of kinetic energy and hence do not make allowance for the contribution of the interaction to the internal energy of the plasma. The contribution of correlations to the entropy is also not taken into account. In ref.[7] (Yu. L. Klimontovich, ZhETF, 60, 1352, 1971) an analysis is made of the Boltzmann equation in which interaction is completely taken into account within the framework of the pair collision approximation. One of the main purposes of the present work is to derive a similar kinetic equation for a plasma in a first approximation with respect to the plasma parameter. Because of the necessity of taking into account polarization, this problem is much more difficult than that considered in [7] and a different approach is required for its solution. The collision integral obtained diverges at small distances, just as the collision integral in the Balescu - Leonard approximation does. Various forms of the collision integrals (combinations of the Boltzmann,

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USSR

KLIMONTOVICH, Yu. L., Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki; May 1972, pp 1770-81

Landau, Balescu-Leonard collision integrals) have been proposed recently which converge at both large and small distances. However, the corresponding thermodynamics functions are not entirely correct. In the present paper the Boltzmann kinetic equation is derived for a nonideal plasma by taking into account the velocity-average contribution of the plasma dynamic polarizability. The collision integral converges at small and large distances. At small distances the corresponding spatial correlation function changes to an expression for the pair collision approximation, and at large distances and in a first approximation with respect to the plasma parameter it is identical to the Debye correlation function. A consequence of this is that correct expressions are obtained for the thermodynamic functions.

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USSR

UDC 535.215.9

KLIMONTOVICH, Yu. L., Moscow State University imeni M. V. Lomonosov

"Problems in the Statistical Theory of the Interaction Between Atoms and Radiation"

Moscow, Uspekhi Fizicheskikh Nauk, Vol 101, No 4, Aug 70, pp 577-605

Abstract: One of the possible methods of describing statistical processes in classical and quantum systems of atoms and an electromagnetic field is presented. A complete description is given only for a specific system because of space limitations; the general theory is presented for the example of a gas in which the atoms interact through a transverse field. It is noted that the results are given in such a form that generalization to the case of interaction through a longitudinal field is obvious. The theory of natural fluctuations of the radiation of a gas laser that determine the width of the radiation line is considered as a specific application. The problem of determining the nonequilibrium polarization noise of the working medium of the laser is determined on the basis of the value of the generated field. The classical theory is presented in the first chapter; and the quantum, in the second. Each chapter can, in turn, be divided into two: the first problem consists in obtaining a system of kinetic equations for the particles and field that describe the dissipative processes in the medium on the basis of the initial microscopic equations. The Liouville

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R001401410001-9"

USSR

KLIMONTOVICH, Yu. L., Uspekhi Fizicheskikh Nauk, Vol 101, No 4, Aug 70, pp 577-605

equation is used as the initial equation for the distribution function $f(x, X, t)$ of the variable particles and the field, where x is the set of coordinates and momenta of the atoms and X is the set of field oscillators. A system of related equations for the simpler distribution functions can be obtained from the Liouville equations: the distribution functions for the variables of a single atom, the distribution functions for the variables of an oscillator, the second distribution functions, the third distribution functions, etc. This system of equations is analogous to the system of equations used by Bogolyubov (1946), Born and Green (1956), and others in the theory of gases and a plasma. It is noted that instead of second and higher distribution functions, it is more convenient to use the equations for the corresponding correlation functions. Two methods are used to obtain an approximate solution for the chain of equations and the kinetic equations, a closed system of equations for the first distribution functions $f_1(x_1, t)$, $f_1(X_1, t)$. The first is based on applying different methods of perturbation theory. This method was first used by Bogolyubov in deriving the Landau kinetic equation and also by Bogolyubov and Gurov in deriving the corresponding quantum equation. This article uses a method close to those used earlier by authors in plasma theory. This method makes it relatively easy to

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USSR

KLIMONTOVICH, Yu. L., Uspekhi Fizicheskikh Nauk, Vol 101, No 4, Aug 70, pp 577-603

account for the contribution of resonance and nonresonance material oscillators and the polarization of the medium in the kinetic equation. After the kinetic equations are established, the natural fluctuations in a [illegible] laser are discussed. Four time parameters are characteristic of an unbounded medium: the frequency of an oscillation or transition, the Doppler width, the coefficient of radiation friction, and the field damping time. Additional parameters appear in describing the statistical processes in a laser: the field damping time in the resonator, the correlation times for amplitude fluctuations, and the phase of the laser radiation. These characteristic times are considerably greater in a gas laser than the times characterizing the dissipation processes in an unbounded medium. This makes possible a statistical description of the processes in two stages: one can first obtain kinetic equations describing the dissipative processes in an unbounded medium and then use these kinetic equations to describe the natural fluctuations of laser radiation. The width of the laser radiation line is determined by two factors: the thermal fluctuations of the field in the resonator and nonequilibrium fluctuations in polarization of the medium, and the basic problem reduces to calculating nonequilibrium polarization fluctuations in the generation mode of the laser. Also given is a calculation

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USSR

KLIMONTOVICH, Yu. L., Uspekhi Fizicheskikh Nauk, Vol 101, No 4, Aug 70, pp 577-605

of the line width of the coherent radiation of a classical generator for illustrative purposes, since there is no direct correspondence between the model used and an actual system. This material is introduced to make it easier to understand the corresponding quantum calculation for an He-Ne laser.

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1/2 048 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--SOURCES OF NATURAL FLUCTUATIONS IN RING LASERS -U-

AUTHOR-(02)-KLIMONTOVICH, YU.L., LANDA, P.S.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL EKSPERIMENTAL'NOY I TEORETICHESKOY FIZIKI, 1970, VOL 58, NR 4, PP 1367-1376
DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--PHASE SHIFT, LASER PROPERTY, OSCILLATION, TRAVELING WAVE, ELECTROMAGNETIC FIELD, ASYMPTOTIC SOLUTION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1988/1566 STEP NO--UR/0056/70/058/004/1367/1376

CIRC ACCESSION NO--AP0106312

UNCLASSIFIED

2/2 048 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0106312

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INTENSITIES OR NATURAL FLUCTUATION SOURCES IN RING LASERS ARE CALCULATED BY TAKING INTO ACCOUNT THEIR DEPENDENCE ON THE FIELD STRENGTH. THE CALCULATION IS PERFORMED FOR A SINGLE TRAVELING WAVE REGIM AND ALSO FOR TWO OPPOSITE WAVES WITH APPROXIMATELY EQUAL AMPLITUDES. ASYMPTOTIC EXPRESSIONS FOR FLUCTUATION SOURCE INTENSITIES ARE CONSIDERED FOR THE LIMITING CASES OF WEAK AND STRONG FIELDS. FORMULAS ARE DERIVED FOR THE CORRELATION COEFFICIENT OF SOURCES ENTERING THE EQUATION FOR OPPOSITE WAVE AMPLITUDES AND PHASE SHIFTS. FACILITY: MOSKOVSKIY GOSUDARSTVENNYY UNIVERSITET IM. M. V. LOMONOSOVA.

UNCLASSIFIED

USSR

UDC 533.601.34

3

YERMAKOV, A. L., YEROSHENKO, V. M., KLIMOV, A. A., MOTULEVICH, V. P., and TERENT'YEV, Yu. N.

"Experimental Investigation of Flow Stability During Intensive Injection"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 6, Nov-Dec 72, pp 114-123

Abstract: Results are presented of an experimental investigation of the loss of flow stability in boundary layers formed aside by injection. The experiments did not confirm the widely held opinion concerning the strong destabilizing influence of injection. Moreover, a flow-stabilization effect is noted when injection intensity is increased; this effect originates due to a decrease in the value of velocity shear in the zone of intensive viscous interaction. A semiempirical formula is obtained for determining the critical Reynolds number at the point of loss of stability. Consideration is given to the development of disturbances, and a correspondence is shown between the experimental data and calculations by the method of small vibrations for an ideal fluid. An analysis is made of the transition to turbulence through stability loss due to the selective intensification of small vibrations and, simultaneously, to the penetration of turbulent

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USSR

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YERMAKOV, A. L., et al., Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 6, Nov-Dec 72, pp 114-123

disturbances of the external stream into the shear zone. The high flow stability in shear layers forced aside by injection is explained by the stabilizing influence of the elastic gaseous medium over which they develop. Nine figures, eight references.

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USSR

UDC: 532.526

YEROSHENKO, V. M., YERMAKOV, A. L., KLIMOV, A. A., MOTULEVICH, V. P., TERENT'YEV, Yu. N.

"Influence of Strong Injection on Stability of Flow and Transition to Turbulent Flow"

Teplofiz. Svoystva i Gazodinamika Vysokotemperatur. Sred. [Heat Physical Properties and Gas Dynamics of High Temperature Media -- Collection of Works], Moscow, Nauka Press, 1972, pp 56-64 (Translated from Referativnyy Zhurnal Mekhanika, No 12, 1972, Abstract No 12B782, by the authors)

Translation: Some general conclusions from the theory of stability using the method of small oscillations are studied. The use of the interferometric method for visualization of the area of loss of stability and the transition to the turbulent mode is analyzed. The data of interference measurements are used to determine such parameters as wavelength, frequency of development and phase velocity of a periodically excited motion. Quantitative data are presented on the dependence of the point of loss of stability and critical Reynolds number on injection parameter. It is established that with a given range of injection parameter, the flow is stabilized. The dependence of the wave number of an unstable periodic excited motion on critical Reynolds number and injection parameter is analyzed. The flow mode when the transition

USSR

Yeroshenko, V. M., Yermakov, A. L., Klimov, A. A., Motulevich, V. P., Terent'yev, Yu. N., Teplofiz. Svoystva i Gazodinamika Vysokotemperatur. Sred., Moscow, Nauka Press, 1972, pp 56-64.

to the turbulent mode is realized through a loss of stability due to reinforcement of small oscillations and the Taylor mechanism related to penetration of the turbulence of the external flow into the mixing zone is studied.

USSR

UDC 532.526.4

YERMAKOV, A. L., YEROSHENKO, V. M., KLIMOV, A. A., MOTULEVICH, V. P., and TERENT'EV, Yu. N.

"Experimental Investigation of the Structure of a Turbulent Boundary Layer During the Injection of Helium"

Moscow, Izvestiya Akademii Nauk, SSSR, Mekhanika Zhidkosti i Gaza, No 3, 1972, pp 60-67

Abstract: The method for protecting the surfaces of various structure elements, based upon the transverse delivery of a substance into the boundary layer, is popular in view of its great effectiveness. In some applications, it becomes necessary to decrease heat fluxes to the surface by a factor of several multiples of 10, and to force the mainstream away from the wall to such an extent that its concentration on the surface be negligibly small. This is realized by means of strong injection. Considerable results have recently been obtained with the use of numerical methods for calculating the interaction of a laminar stream of gas with a body during the intensive delivery of a mass from the surface. Comparison of the results of numerical calculation yields good with experimental values.

USSR

YERMAKOV, A. L., et al., Izvestiya Akademii Nauk, SSSR, Mekhanika Zhidkosti i Gaza, No 3, 1972, pp 60-67

The present work represents a continuation of experimental research on the structure of a turbulent boundary layer during injection through a porous plate. The results of an experimental investigation of the structure of a turbulent boundary layer on a porous plate during the injection of helium are presented. The influence of the injection parameter upon the averaged and pulsation distribution of velocities and concentrations in the layer is analyzed. The sequence of the process of forcing the mainstream away is described, and the displacement parameter is given. 7 figures. 9 references.

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USSR

YEROSHENKO, V. M., YERMAKOV, A. L., KLIMOV, A. A., MOTULEVICH, V. P., TERENT'-YEV, YU. N., Moscow

"Experimental Study of the Effect of Intense Blowing of Various Gases on a Turbulent Boundary Layer"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 1, January-February 1971, pp 162-167

Abstract: This article contains the results of an experimental study of the effect of blowing of various gases (air, CO_2) on the turbulent boundary layer of a flat plate. The deformation sequence of the average velocity and concentration distributions of the turbulent boundary layer which occurs on variation of the blowing parameter in a broad range is investigated. The increase in thickness of the laminar sublayer during blowing without turbulization and an increase in the physical thickness of the boundary layer are detected. The experiments were performed on a gas dynamic unit with a Mach-Zender interferometer type IT-14. For the study the blowing parameter $F = (\rho v)_w/(\rho u)_e$ where w refers to the conditions at the wall and e, to conditions at the edge of the boundary layer. All the experiments were performed under isothermal conditions

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YEROSHENKO, V. M., et al., Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 1, January-February 1971, pp 162-167

with a zero longitudinal pressure gradient. The flow was essentially subsonic.

The experiments refute the widespread published opinion that blowing of a gas into a turbulent boundary layer turbulizes the laminar sublayer. This obviously does not always occur and depends on the size of the pores of the penetrable surface. The investigated two stages of deformation of the velocity and concentration profiles (boundary layer and jet type) are separated by an intermediate stage of deformation characterized by constant values of the velocity and concentration gradients along the entire zone of mixing both near the wall and in the core. By analyzing the curves representing the dimensionless velocity and concentration profiles as functions of the carbon dioxide gas blowing parameter it can be stated that the dissimilarity of the velocity and concentration profiles in the presence of weak blowing of carbon dioxide gas is caused by the presence of a density profile across the boundary layer -- $\rho_w/\rho_e = 1.5$. It is pointed out that if this is so it is indifferent how the density profile is created (for example, it can be obtained

YEROSHENKO, V. M., et al., Izvestiya Akademii Nauk SSSR, Mekhanika Zhidkosti i Gaza, No 1, January-February 1971, pp 162-167

with uniform blowing but in the presence of heat exchange). It is also interesting to note that the concentration profiles in the presence of weak blowing of carbon dioxide gas are also deformed by power laws.

USSR UDC 616.36-092.9-085.849.19

LAGUNOVA, I. G., SAVCHENKO, Ye. D., GARVEY, N. N., LIKHOVETSKAYA, L. L., SHAMAYEVA, G. G., KLIMOV, A. D., and MOGUTOV, V. I., Moscow, Scientific Research Institute of Roentgenology and Radiology, Ministry of Health RSFSR

"The Effects of Neodymium Laser Irradiation on the Rat Liver"

Leningrad, Voprosy Onkologii, Vol 18, No 1, 1972, pp 91-94

Abstract: Single irradiation of a 2 by 5 mm abdominal area over the rat liver with pulsed neodymium laser rays with initial energy of 100-200 joules and incident density of 1000-4000 joules/cm^2 causes local injury to the liver tissue, ranging from degenerative changes to complete necrosis. Destruction of blood vessels occurs in the central zone and paralytic vasodilation with edema in the peripheral zone. Proliferation of fibroblasts begins after 5 days, and a capsule is formed around the injured area. Connective tissue cells and bile capillaries grow toward the necrotic center along with blood vessels. Eventually, hepatocytes, lymphocytes, and macrophages appear. On the 20th day, the necrotic area is filled with patches of new hepatic parenchyma. After stronger irradiation (3000-4000 joules/cm^2), the injury is more severe and recovery slower.
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APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R001401410001-9"

1/3 010 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--EFFECT OF THE NONHORIZONTAL POSITION OF A SIEVE PLATE ON THE EFFECTIVENESS OF MASS TRANSFER UNDER FRACTIONAL DISTILLATION CONDITIONS

AUTHOR-(03)-KLIMOV, A.G., KAPITALNYY, V.G., POPLAVSKIY, YU.V.

COUNTRY OF INFO--USSR

SOURCE--GIDROLIZ. LESOKHIM. PROM. 1970, 23(2), 13-15

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--MASS TRANSFER, FRACTIONAL DISTILLATION, BUTANOL, ACETATE, VAPOR PRESSURE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1220 STEP NO--UR/0328/70/023/002/0013/0015

CIRC ACCESSION NO--AP0116683

UNCLASSIFIED

2/3 010 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0116683

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. BECAUSE OF THE DISCREPANCY EXISTING BETWEEN THE OFFICIAL TOLERANCE VALUES FOR THE DEGREE OF DEVIATION OF PLATES FROM THE HORIZONTAL POSITION (TILTING, MEASURED IN MM) AND THE PRACTICAL POSSIBILITY OF ADJUSTMENTS UNDER INDUSTRIAL CONDITIONS, STUDY WAS MADE OF THE EFFECT OF TILTING ON MASS TRANSFER DURING RECTIFICATION TO OBTAIN DATA FOR A MORE REALISTIC APPROACH TO THE PROBLEM OF TOLERANCES. AN INDUSTRIAL SIEVE PLATE RECTIFICATION COLUMN (AS THE MOST SENSITIVE TO TILTING) WAS USED FOR SEPG. A MIXT. CONTG. 11 WT. PERCENT BUOH AND 89 WT. PERCENT BUOAC. COLUMN CONTROL INSTRUMENTS MADE IT POSSIBLE TO MAINTAIN A CONST. VAPOR PRESSURE IN THE REBOILER AND TO CONTROL THE TEMP., THE PRESSURE GRADIENT, AND THE AMT. OF REFLUX. THE EFFECTIVENESS OF THE MASS TRANSFER WAS EVALUATED FROM THE OVERALL EFFICIENCY COEFF. (RATIO OF THE THEORETICAL TO THE ACTUAL NO. OF PLATES), AND THE EFFECTIVENESS OF THE INDIVIDUAL PLATES FROM THE TEMP. PHASE COMPN. GRAPHS. ANY DEVIATION FROM THE HORIZONTAL POSITION OF A PLATE AFFECTS THE MASS TRANSFER ADVERSELY, ALTHOUGH THIS EFFECT IS LESS MARKED AT HIGHER VAPOR FLOW VELOCITIES. IN DETG. THE REQUIRED TOLERANCES, TECH. DIFFICULTIES RELATED TO INDUSTRIAL OPERATION OF A COLUMN MUST BE CONSIDERED, SINCE THE COLUMN OPERATES AT VARYING LOADS OF VAPOR AND LIQ. (IT CONSTITUTES A LINK IN CONNECTED EQUIPMENT). THUS, THE TOLERANCES SHOULD BE ESTABLISHED BY CONSIDERING CONSTRUCTION FACTORS; IN DETG. THE NO. OF PLATES A CORRECTION SHOULD BE MADE FOR THE WORST POSSIBLE OPERATING CONDITIONS.

UNCLASSIFIED

3/3 010 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0116683

ABSTRACT/EXTRACT--THE CORRECTION CAN BE CALCD. FROM THE RELATION OBTAINED BETWEEN THE COLUMN EFFICIENCY, THE TILT OF THE PLATES, AND THE PERCENT REDN. OF MASS TRANSFER. A 5 MM TILT IS FULLY ADMISSIBLE; IN SUCH CASE THE REDN. OF EFFICIENCY CAN BE COMPENSATED BY INSTALLATION OF A FEW ADDNL. PLATES.

UNCLASSIFIED

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UR 0482

Soviet Inventions Illustrated, Section II Electrical, Derwent,

225552 CONVERTION OF NUMBERS. The binary code is applied to the master converter. The numbers represent a logarithmic code. The digits are decoded, analysed and the characteristic of an antilogarithm is produced. Logarithm circuits are employed for the determination of a correct mantissa. 23.2.67. as 1136338/26-24. V.A.OREKHOV, A.N.KLIMOV. (17.12.68.) Bul.27/ 29.8.68. Class 42m. Int.Cl. G06f.

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1945 1924

Acc. Nr: AP0101133 Ref. Code: UR0297

PRIMARY SOURCE: Antibiotiki, 1970, Vol 15, Nr 3, pp 212-215

STUDIES ON CERTAIN SIDES OF MECHANISM OF ACTION OF CHLORAMPHENICOL ON GENETIC TRANSFORMATION IN STREPTOCOCCI

A. N. Klimov, M. M. Krasilnikova, I. M. Tereshin

Leningrad Institute for Antibiotics

The mechanism of action of chloramphenicol (in subbacteriostatic concentrations) on genetic transformation of streptomycin resistance in hemolytic streptococci of group H, strain Challis was studied. It was found with P^{32}-labeled DNA that chloramphenicol had no effect on incorporation of the radioactive marker to the competent cells of streptococci. A study of the effect of chloramphenicol on various stages of transformation showed that it produced suppression of the activity of intracellular DNA-se and RNA-se. The amount of RNA in the recipient cells increased under the action of chloramphenicol.

USSR UDC 621.382.2.029.64

DEMIDOV, V.K., KLIMOV, B.N., KONTENKO, V.I.

"Semiconductor Diode-Displays Of The Submillimeter Band Of Radio Waves"

Elektron.tekhnika. Nauch.-tekhn.sb. Kontrol'no-izmerit.apparatura (Electronic Technology. Scientific-Technical Collection. Monitoring and Testing Equipment), 1971, Issue 1(22), pp 66-73 (from RZh--Elektronika i yeye primeneniye, No 11, Nov 1971, Abstract No 11B162)

Translation: Two polycrystalline layers of silicon are successively deposited on a graphite substrate: the lower 20 kilomicrons thick of p^+-Si doped with boron in a concentration of 10^{18} cm^{-3}, and the upper 0.2 micrometer thick of p-Si with hole concentrations varying from 10^{17} cm^{-3} at the external surface to 10^{18} cm^{-3} at the boundary of the contact of the two layers of silicon. A tungsten needle was clamped to the top of the p-Si film and in this manner semiconductor diodes were prepared which in the range of wavelengths of 0.27--1.5 mm had a voltage sensitivity of 0.5--1500 v/w and an output resistance from several kilohms to tens of ohms. The threshold value of the power in the 0.8-mm range is not worse than 10^{-10} watt. 6 ill. N.V.

1/1

USSR UDC 621.476.223.029.64.001.24

BARANOV, L. I., GAMANYUK, V. B., KLIMOV, B. N., USANOV, D. A.

"On Calculation of Microwave Semiconductor Waveguide Resonators"

Moscow, Radiotekhnika i Elektronika, Vol 16, No 8, Aug 71, pp 1437-1441

Abstract: One type of waveguide modulator is a section of rectangular waveguide which contains a semiconductor diode in the form of a thin plate located in the center of the waveguide parallel to the narrow wall. Modulation is achieved by varying the conductivity of the base region of the diode. Theoretical and experimental data are compared and discrepancies are explained. It is concluded that the relationships derived in the paper can be used for the design of modulators based on laminar structures. The authors thank G. Ya. Nikushkin and S. N. Zorya for considerable assistance rendered during the calculations, as well as N. N. Khramov for participating in the experimental research.

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USSR

UDC 531.1

BOGATSKAYA, I. G., KLIMOV, D. M., and SLEZKIN, L. N., Moscow

"The Effect of the Ovality of Suspension Elements on the Accuracy of a Gyroscopic Integrator of Linear Accelerations"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Tverdogo Tela, No 4, Jul-Aug 73, pp 68-70

Abstract: The authors study the motion of a gyroscopic integrator of linear accelerations in the presence of ellipticity of support elements acting as the suspension for the gyroscope housing. The case is considered where the acceleration being integrated by the device is constant and its direction constitutes a constant angle with the axis of the external frame of the device, for example where the unit is set on the earth at an angle lamba to the plane of the horizon. A formula is derived for the relative error of indication of a gyrointegrator.

1/1

USSR

UDC: 531.01

KLIMOV, D. M., KOSMODEM'YANSKAYA, G. N., CHERNOUS'KO, F. L.

"Concerning the Motion of a Gyroscope With Noncontact Suspension"

Izv. AN SSSR. Mekh. tverd. tela (News of the Academy of Sciences of the USSR. Solid State Mechanics), 1972, No 2, pp 3-8 (from RZh-Mekhanika, No 9, Sep 72, Abstract No 9A79)

Translation: It is assumed that a gyroscope in a noncontact suspension with center of gravity noncoincident with the point of suspension can be treated as a body with a fixed point. Slight imbalance or slight nonsphericity of the ellipsoid of inertia is taken as the small parameter ε of the problem. Averaged equations of motion are constructed and used to determine the precession of the gyroscope axis due to imbalance. It is stated that for sufficiently small ε the approximate solution guarantees an arbitrarily small error on an infinite time interval (both for the resonance and non-resonance cases). Bibliography of 6 titles. I. V. Novozhilov.

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USSR

UDC 531.1

KLIMOV, D. M., KOSMODEM'YANSKAYA, G. N., CHERNOUS'KO, F. L., Kaluga, Moscow

"Concerning the Motion of a Gyroscope With a Noncontact Suspension"

Moscow, Mekhanika tverdogo tela, No. 2, Mar/Apr 72, pp 3-8

Abstract: The motion of a gyroscope suspended in a certain force field is investigated, where it is assumed that the force field by providing stability of the center of suspension of the gyroscope with respect to the base has a negligible effect on its angular motion and the center of gravity of the gyroscope has a small displacement relative to the center of suspension. The problem of the motion of a gyroscope with noncontact suspension in this formulation is equivalent to the problem of the motion of a body with a fixed point, the center of gravity of which is a small distance removed from the fixed point. Since the equations of motion of a body where the center of gravity does not coincide with the point of support are generally not integrable, the following parameters are selected as phase coordinates defining the motion of the body, having in mind the subsequent application of the method of averaging in terms of the rapidly varying coordinates: the magnitude K of the kinetic moment

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USSR

KLIMOV, D. M., et al, Mekhanika tverdogo tela, No. 2, Mar/Apr 72, pp 3-8

of the body, the angles α and β determining the direction of the vector of the kinetic moment relative to the fixed coordinate system with center at the point of suspension, and the angles ψ, θ, ϕ determining the position of the axes z_i connected with the solid body relative to the axes ζ_i connected with the vector K of the kinetic moment of the body. It is shown that the kinetic energy T changes slowly with time since the values of $M_i (i = 1, 2, 3)$ are small, where the M_i are the projections of the moment of the external forces relative to the point of suspension of the axes connected with the vector K. The general case of rapid motion of a body with arbitrary moments of inertia is also discussed. The results can be used in analyzing the accuracy of gyroscopes with various suspensions, such as electrostatic and electromagnetic.

2/2

USSR UDC: 531.1

KLIMOV, D.M., ROGACHEVA, L.N. and FILIPPOV, V.A., Moscow

"Resonant Regimes of Gimbal-Mounted Gyroscope"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Tverdogo Tela, No 4, Jul/Aug 72, pp 3-14

Abstract: The motion of a balanced gyroscope, gimbal mounted on a fixed base, is analyzed. The equations of motion are set up. The solutions are obtained for the case of no excitation and for the case of a small cyclic moment acting on the inner ring. It is shown that with no excitation the inner ring may oscillate or rotate depending on the initial conditions. The amplitudes of oscillation and the speed of rotation as a function of exciting frequency are given. The stability of resonant regimes, including the case of zero friction of the gimbals, is investigated. Graphs of resonant frequency for several values of friction coefficient are presented.

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USSR

KLIMOV, D. M., FILIPPOV, V. A., Moscow

"On Resonance in a Strongly Nonlinear Gyroscopic System"

Moscow, Mekhanika Tverdogo Tela, No 6, Nov/Dec 1970, pp 42-54

Abstract: Forced resonance oscillations are considered for a gyroscope in a Cardan suspension, where the amplitudes of the oscillations are assumed to be finite, thus resulting in appreciable nonlinearity of the system. An approximate formula is derived for the mean angular velocity of the gyroscope about the external axis in the case of small equilibrium amplitudes. The result is analogous to that found in a previous work for the case of undamped nutation, which coincides with formulas derived by Magnus, Plymale and Goodstein.

USSR

KLIMOV, G. P., RUDLOVCHAK, V.

"Invariant Randomized Estimate for Linear Regression Model"

Upravlyayemyye Sluchayn. Protsessy i Sistemy [Controlled Random Processes and Systems -- Collection of Works], Kiev, 1973, pp 197-204 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V175, by A. Rukhin).

Translation: A group theory statement of the problem is used to indicate the form of the optimal invariant randomized estimate of the matrix of coefficients in a linear regression model.

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USSR

KLIMOV, G. P.

"Invariant Sequential Estimation"

Upravlyayemyye Sluchayn. Protsessy i Sistemy [Controlled Random Processes and Systems -- Collection of Works], Kiev, 1973, pp 188-196 (Translated from Referativnyy Zhurnal Kibernetika, No 6, 1973, Abstract No 6V146, by A. Rukhin).

Translation: The problem of invariant successive estimation of a group parameter with a quality measure for which the optimal invariant estimate is randomized and corresponds with the a posteriori distribution with a priori distribution which is a right measure of Haar in the initial group of transforms is studied. For the particular case of distributions with full sufficient statistics, the form of the optimal invariant stopping rule is indicated. (In the general case, the form of this stopping rule is produced using methods of dynamic programming.)

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USSR

POPOV, A. V., and KLIMOV, I. A., Editorial Board of the Journal Radiobiologiya (Radiobiology) of the Academy of Sciences USSR

"Proteolytic Activity of the Blood Serum of Dogs Exposed to Gamma-Neutron Radiation in Lethal and Sublethal Doses"

Proteoliticheskaya aktivnost' syvorotki krovi sobak pri vozdeystvii gamma-neytronnogo izlucheniya v letal'nykh i subletal'nykh dozakh (cf. English above), Moscow, 1970, 7 pp, bibliography with 15 titles (No 2018-70 Dep) (from RZh-Biologicheskaya Khimiya, No 2, 25 Jan 71, Abstract No 2F1329 Dep by authors)

Translation: In dogs which had undergone acute gamma-neutron irradiation in sublethal and lethal doses the proteolytic activity of the blood serum increased during the climax of radiation sickness. This increase varies with radiation dose, irradiation conditions (unilateral or bilateral) and body weight of the animals. Survival of the dogs is probable unless proteolytic activity is three or four times initial activity, but death of the animals is certain, as a rule, if the increase in activity is more significant.

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USSR UDC: 531.767:629.13.014.34.69

DOBROLYUBOV, N. V., BARSUKOV, I. I., KLIMOV, I. T., URMANCHEYEV, S. A.

"A Device for Converting Small Air Speeds to an Electric Signal"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 26, 1970, Soviet Patent No 279213, Class 42, filed 2 Apr 69, p 143

Abstract: This Author's Certificate introduces a device for converting small air speeds to an electric signal, designed chiefly for helicopters. The installation contains a pressure pickup mounted on a blade of the helicopter rotor, and a pressure differential pickup. As a distinguishing feature of the patent, the construction is simplified and the reliability of the device is improved by installing an air collector in the hollow shaft of the rotor. This air collector connects the pressure pickup mounted on the rotor blade to the pressure differential pickup.

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USSR

UDC: 621.371.095.1

POTEKHIN, V. A., GLUKHOV, A. N., KLIMOV, I. Z.

"Generalized Polarization Parameters of Electromagnetic Waves of Arbitrery Form"

Khar'kov, Radioelektronika letatel'n. apparatov--sbornik (Aerospace Electronics--collection of works), vyp. 1, Khar'kov Aviation Institute, 1972, pp 56-61 (from RZh-Radiotekhnika, No 12, Dec 72, abstract No 12A298 [résumé])

Translation: The paper demonstrates the possibility of representing an electromagnetic wave of arbitrary shape at some point in space as the sum of plane waves propagating in three mutually orthogonal directions. Analytical expressions are presented for the degree of polarization and the geometric characteristics of ellipses of polarization of additive plane waves and integrated space waves. Bibliography of 4 titles.

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1/2 029 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--LABORATORY INSTRUMENT FOR EVALUATING THE ANTIWEARING PROPERTIES OF MOTOR OIL, HYDRAULIC FLUID, AND JET FUEL -U-

AUTHOR-(04)-FILATOV, P.G., KLIMOV, K.I., CHURSHUKOV, YE.S., YERMOLOV, F.N.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, VESTNIK MASHINOSTROYENIYA, NO 2, 1970, PP 54-56

DATE PUBLISHED-------70

SUBJECT AREAS--MATERIALS, PROPULSION AND FUELS, METHODS AND EQUIPMENT

TOPIC TAGS--PHYSICS LABORATORY INSTRUMENT, LUBRICATING OIL, HYDRAULIC FLUID, JET FUEL, TEST METHOD, FRICTION TEST, ANTIWEAR ADDITIVE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/1870 STEP NO--UR/0122/70/000/002/0054/0056

CIRC ACCESSION NO--AP0130697

UNCLASSIFIED

2/2 029 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0130697

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A DESCRIPTION IS GIVEN OF A UNIT INITATING THE WORK OF REAL FRICTION PAIRS WITH SEQUENTIAL RECIPROCATING MOTION. ANTIWEARING PROPERTIES ARE DETERMINED IN THE VOLUME OF FILM OF THE FLUIDS TESTED. PROCEDURES FOR EVALUATING THE ANTIWEARING PROPERTIES OF OILS AND FUELS ARE DEVELOPED. THE ORIGINAL ARTICLE HAS TWO TABLES, TWO ILLUSTRATIONS, AND FOUR BIBLIOGRAPHIC ENTRIES.

UNCLASSIFIED

ACCESSION NR: AP4027212 S/0286/64/000/006/0047/0047

AUTHOR: Klimov, K. I.; Mikheyev, V. A.

TITLE: Friction machine for the testing of lubricants (Class G 01n; 42k, 38_{02}, No. 161136 from 1 September 1962

SOURCE: Byul. izobret. i tovarn. znakov, no. 6, 1964, 47

TOPIC TAGS: lubricant, lubricant testing, friction machine, friction testing, lubrication

ABSTRACT: 1. Friction machine for the testing of lubricants, containing two working shafts and two drive and loading systems, has the special feature that, for the purpose of carrying out tests for rolling and sliding friction as well as combined rolling and sliding friction in any ratios, the machine is equipped with a pyramid composed of five spheres, the middle three of which are arranged in a ring with the top and bottom spheres being positioned in the working shafts which have individual drive in both directions and separate loading.

2. Machine described in paragraph 1 has the special feature that, for the purpose of measuring the friction moment without the use of troublesome additional supports,

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ACCESSION NR: AP4027212

the role of the bottom support is fulfilled by the bottom sphere. [Abstractor's note: this is a complete translation of the original article.] Orig. art. has: 1 figure.

ASSOCIATION: none

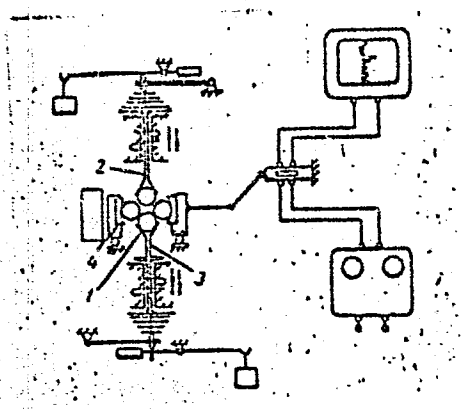
SUBMITTED: 01Sep62 DATE ACQ: 22Apr64 ENCL: 01

SUB CODE: FL, SD NO REF SOV: 000 OTHER: 000

Card 2/3

ACCESSION NR: AP4027212

ENCLOSURE: 01



Legend: 1 - pyramic composed of 5 spheres; 2 and 3 - working shafts; 4 - loading ring.

Card 3/3

USSR

UDC: 620.179.14

KISEL'GOF, E. Sh., KLIMOV, K. M., Scientific Research Institute of Internal Inspection

"Development of a Non-Contact Method of Production Monitoring the Hardness of Cold-Rolled Sheet Steel"

Sverdlovsk, Defektoskopiya, No 3, May/Jun 71, pp 5-10

Abstract: Research was done to find an optimum method of checking the hardness of sheet material in the form of a continuous band moving at a rate of 5 m/s with vibrations of the order of ±2 mm and tension up to 100 kgf, in a temperature range of 10-40°C. The sheet was made of low carbon 08KP steel. Sheet production involved cold-rolling a 2-4 mm strip to a thickness of 0.20-0.36 mm in a band with a width of the order of 750 mm, recrystallization annealing in a bell furnace, dressing off (low compression rolling), and cutting the sheet into units measuring about 700 × 500 mm. The installation developed on the basis of this research utilizes the principal of magnetizing the sheet material in a dc field which changes the permeability of the material and thus gives an indi-

USSR

KISEL'GOF, E. Sh., KLIMOV, K. M., Defektoskopiya, No 3, 1971, pp 5-10

cation of the hardness. The indicator must be set for each thickness. The device has a range of 30-70 HR30 units on the TKS-1 meter with an accuracy of ±4 units. Five figures, one table, bibliography of two titles.

2/2

USSR

UDC 669.245.018.44(088.8)

PANASYUK, I. O., BRUSILOVSKIY, B. S., VILKOV, V. I., VORONIN, G. M., YEGOROV, YE. YE., YELKIN, I. S., [redacted], KOVROVA, YE. A., KONTSEVAYA, YE. M., LYUBINSKAYA, M. A., MILENINA, YE. G., MIKHAYLOV, I. A., NAZUVAYEV, YE. I., SIBOTKIN, A. I., SOLDATCHENKO, V. A., SPILITSIN, R. I., SHAPIRO, S. M.

"Nickel-Chromium Base Alloy"

USSR Author's Certificate No 276418, Filed 2 Jun 69, Published 16 Oct 70 (from RZh-Metallurgiya, No 4, Apr 71, Abstract No 4I766P)

Translation: The heat-resistant alloy has the following composition (in %): C 0.03-0.1, Cr 30-40, W 3-5.5, Mo 2-4, Ti 0.5-1.5, Al 0.5-1.5, Nb 0.5-1.5, Ce 0.01-0.3, B 0.003-0.008, Ni, the rest. The alloy has increased heat resistance and also the following mechanical and physical-chemical properties at 1,100°: σ_B 8 kg/mm^2, δ 65%, $\sigma_{\text{stress-rupture}}$ 1 kg/mm^2, coefficient of linear expansion $15 \cdot 10^{-6}$ deg^{-1}, increase in weight after 100 hours of heating at 1,200° in the air 0.6 g/m^2. It is corrosion-resistant in a moist atmosphere under tropical conditions, in sea water, and in the products of combustion of highly sulfurous fuel.

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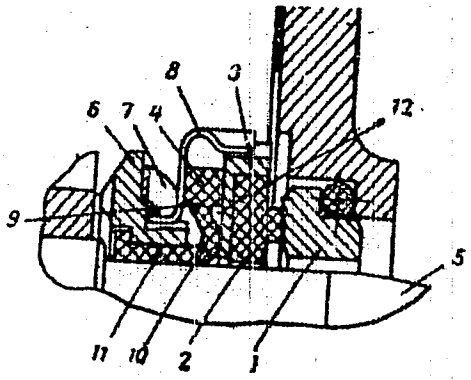
AA0052654

Klimov, L. Ya.; Obukhov, N. Ya.; Lavrov, M. T.; Antipenko, I. N.; Severtsev, S. A.



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AA0052654 KLIMOV L. Ya. UR 0482

Soviet Inventions Illustrated, Section III Mechanical and General, Derwent, /- 70)

SU 1163033 is reliable and provides a tight seal. It consists of a fixed chromium silicon steel ring 1, encased (3) rotation carbon ring 2 and an elastic gland 4 held on the shaft 5 by a sleeve 6. Crimped spring 7 fitted on the sleeve pushes the rotating clamp 8 and gland 4. The gland section represents a ring, neck 9, radiused portion 10 which projects by 0.3 mm in front of the ring face and a cylindrical part 11. During the assembly, the air is forced out of the space 12 and the gland is sucked towards the ring 2.

9.6.67. as 1163033/25-27, CHUGAEV, N.G. et al. (2.9.69) Bul. 14/18.4.69. Class 47c, Int Cl. F 06d.

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19821392

KLIMOV, M. A.

CAROL

(4)

SO: JPRS 60598
20 NOV 73

DESIGN AND ELECTRICAL CHARACTERISTICS OF COMMUNICATIONS CABLES

[Selected portions of a book by I. Ye. Yefimov, M. A. Klimov, L. M. Lakernik, and D. L. Sharle; Moscow, Konstruktivnyye i elektricheskiye kharakteristiki kabeley svyazi, Russian, Gosudarstvennoye izdatel'stvo literatury po voprosam svyazi i radio, 1959, pp 38-55, 186-196, 282-361]

Chapter 2

BASIS OF THE THEORY OF TRANSMISSION ALONG COMMUNICATIONS CABLES

2.1. Basic principles and circuits of electrical communications along cables

The transmission of communications from one point to another by means of electrical energy is called electrical communications. Electrical communications may be telegraph or telephone.

In telegraphy, by means of direct current pulses of current of various duration and various combinations are sent to the line. In the receiving apparatus these pulses are reproduced on a moving paper tape in the form of dots and dashes. The conventional combinations of dots and dashes, replacing the letters of the alphabet, are called a telegraph code (Morse alphabet). Modern high-speed telegraph apparatuses make it possible to transmit letters rather than conventional signs.

Telegraph signals are sent to the line in the form of combinations of pulses of direct current of various duration and various sign. In the study of processes of the transmission of telegraph signals along a line, the currents and voltages of these signals can be conveniently considered as periodic transmissions of elementary pulses (Figure 2.1). Such pulses correspond to dots in the operation of the Morse apparatus and to the transmission of the letter T in the operation of letter-printing

USSR

UDC 621.315.2.054.3

KLIKOV, M.A., KOZLOV, V.A.

"Compensation Of High-Frequency And Low-Frequency Voltage Of Interference In A Wide Frequency Spectrum"

Elektrosvyaz', No 2, 1972, pp 55-59

Abstract: The problem is considered of protecting communication channels from the effects of exterior low-frequency and high-frequency electromagnetic fields. The causes and location of the onset of noise currents in two-conductor coupling circuits are discussed as well as the conditions for compensation of noise currents in one amplifier section, and compensation of noise currents with the presence of an effective signal. A method is presented of automatic wide-band compensation which is free from a number of defects found in other compensation systems. The principal circuit is shown of a model of a wide-band noise-suppressing device. Data obtained from tests of this model on operative cable long lines of communication are presented. 5 fig. 1 tab. 3 ref. Received by editors, 31 March 71.

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RAN/ /R-760/G-NKT 73 Dec 72.

(3

Pryadkin, K. K., R. V. Mitin, and N. N. Klimov. Electrodeless discharge in xenon at pressures to 40 atm. IN: Fizika plazmy i problemy upravlyayemogo termoyadernogo sinteza. Kiyev. Izd-vo Naukova dumka, no. 1, 1971, 226-230.

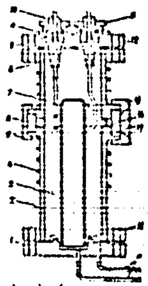

Fig. 1. Sketch of discharge chamber with external support. 1 - lower flange; 2 - stable metallic chamber; 3 - quartz tube; 4 - cooling coil; 5, 11, 13 - nut; 6, 15 - observation ports; 7 - HF generator; 8 - teflon seal; 9 - quartz seal; 10 - teflon insulator; 12 - upper flange; 14 - projection camera; 16 - tightening ri[illegible] 17 - connection pipe.

Electrodeless high-frequency discharges in xenon at pressures to 40 atm were studied and the possibility of generating such discharges at still higher pressures was demonstrated. A fractional radiant energy loss in the overall discharge energy balance was determined as a function of discharge power and chamber pressure within the interval of 0.1 - to 40 atm. The maximum radiated power achieved at pressures of 5 to 40 atm was about 3.5 kw and the maximum light flux was about $1.5 \cdot 10^5$ l. Two discharge chamber structures were used: a thick-walled quartz chamber cooled by air or water, and a water-cooled chamber with an external support, illustrated in Fig. 1. Experimental procedures are outlined and results are plotted.

KLIMOV, N.N.

Acc. Nr.: AP0042553 Ref. Code: UR0203

JPRS 50162

Determining Coefficients of Reaction Rates

(Abstract: "Possibility of Determining the Coefficients of Reaction Rates from Ionospheric Data," by I. A. Krinberg, B. N. Velichanskiy, N. N. Klimov and Yu. F. Solov'yev, Siberian Institute of Terrestrial Magnetism, Ionosphere and Radio Wave Propagation; Moscow, Geomagnetizm i Aeronomiya, Vol X, No 1, 1970, pp 84-89)

One of the methods for determining the coefficients of rates of reactions transpiring in the ionosphere is the processing of curves of the diurnal variation of electron concentration n(t). In earlier studies it was shown that as many as six coefficients could be determined. However, there are many other secondary reactions which have not yet been taken into account. In this paper an effort is made to clarify the degree of reliability of the values of the coefficients of reaction rates determined using the n(t) curve and what is the maximum possible number of coefficients which can be determined. The analysis shows that as a result of the quasistationary nature of the process of appearance and neutralization of charges and the presence of fluctuations of electron concentration by using the curve of the diurnal variation of electron concentration $n_*(t)$ at altitudes of 100-200 km it is possible to determine only some algebraic

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combinations A_n of the coefficients of the reaction rates α_i and γ_j. However, for determining the coefficients α_i and γ_j themselves it is necessary to use additional relations.

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USSR UDC: 537.312.62

BARON, V. V., DEMIDENKO, T. F., KLIMOV, S. I., SAVITSKIY, Ye. M., TUREVSKIY, V. M.

"Superconducting Magnets for Quantum Paramagnetic Amplifiers"

V sb. Probl. sverkhprovodyashch. materialov (Problems of Superconducting Materials--collection of works), Moscow, "Nauka", 1970, pp 209-215 (from RZh--Radiotekhnika, No 5, May 71, Abstract No 5D550)

Translation: On the basis of the operating principle and parameters of the paramagnetic crystals of quantum paramagnetic amplifiers, the authors give a basis for the requirements to be satisfied by the characteristics of superconducting magnets and solenoids. The results of development and experimental verification of superconducting magnets and solenoids with winding of copper--plated and insulated grade RNS wire and shields of NT-1 alloy and compound are presented together with their design peculiarities. Types of superconducting magnets and sectionalized solenoids are created in the developmental process. Two illustrations, bibliography of four titles.

1/1

USSR

UDC 537.312.62:538

BARON, V. V., DEMIDENKO, T. F., KLIMOV, S. I., SAVITSKIY, Ye. M., and TUREVSKIY, V. M.

"Superconducting Magnets for Quantum Paramagnetic Amplifiers"

Problemy Sverkhprovodyashchikh Materialov [Problems of Superconducting Materials -- Collection of Works], Moscow, Nauka Press, 1970, pp 209-215

Translation: Based on the operating principle and parameters of paramagnetic crystals in quantum paramagnetic amplifiers, the requirements placed on characteristics of superconducting magnets and solenoids are explained.

Results are presented from the development and experimental testing of superconducting magnets and solenoids with windings of copper and type RNS insulated wire and shields of NT-1 alloy and compounds, as well as their design features.

Types of superconducting magnets and sectioned solenoids were created in the process of development.

2 figures, 4 biblio. refs.

1/1

UDC 669.15.018.8

USSR

LEVIN, F. L., KONDRAT'YEV, A. I., BABAKOV, A. A., GOLOVIN, A. I., and KLIMOV, S. V.

"Effect of Alloying Elements on Structure and Properties of Chromium-Manganese Steel"

Sb. tr. TsNII chern. metallurgii (Collection of Works of Central Scientific Research Institute of Ferrous Metallurgy), 1970, vyp. 77, pp 119-124 (from RZh-Metallurgiya, No 3, Mar 71, Abstract No 3I609 by authors)

Translation: During the start-up of the industrial production of N-containing stainless steel Kh17AG14 (EP413) it was found that the steel is susceptible to the formation of porosity caused by the evolution of N_2 during the crystallination of ingots. Peculiarities of the effect of Ti, C, Si, and N on the Steel's structure and properties were studied and rational alloying limits assuring the complete elimination of ingot porosity were established. The quality of the metal was improved without any impairment of its physico-mechanical properties. One illustration. One table. Bibliography with two titles.

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USSR

UDC 669.017.1:669.14.018.8

LEVIN, F. L., KONDRAT'YEV, A. I., BABAKOV, A. A., GOLOVIN, A. I., and KLIMOV, S. V.

"Influence of Alloying Elements on Structure and Properties of Chrome-Manganese Steel"

Spetsial'nyye Stali i Splavy (Special Steels and Alloys -- Collection of Works), No 77, Metallurgiya Press, 1970, pp 119-124

Translation: During the process of industrial production of nitrogen-containing Kh17AG14 (EP213) stainless steel, a tendency of the steel to formation of pores resulting from separation of nitrogen during crystallization of ingots, was noted.

The specifics of the influence of titanium, carbon, nickel, and nitrogen on the structure and properties of the steel are studied and effective limits of alloying are determined, providing for complete elimination of porosity of ingots. The quality of the metal was increased without decreasing the physical and mechanical properties of the steel. 1 figures; 1 table; 2 biblio. refs.

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1/2 021 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--TREATMENT OF NONDEOXIDIZED STEELS WITH GASES IN LADLES -U-

AUTHOR-(05)-KABLUKOVSKIY, A.F., KLIMOV, S.V., SALAUTIN, V.A., YEFIMOV, I.A., STURMAN, V.K.

COUNTRY OF INFO--USSR

SOURCE--METALLURG (MOSCOW) 1970, 15(3), 18-21

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--GAS CONTAINING METAL, METAL CONTAINING GAS, ARGON, METAL REFINING, CARBON MONOXIDE, METAL MELTING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3005/0941 STEP NO--UR/0130/70/015/003/0018/0021

CIRC ACCESSION NO--AP0133027

UNCLASSIFIED

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R001401410001-9"

2/2 021 UNCLASSIFIED PROCESSING DATE--04DEC70
CIRC ACCESSION NO--AP0133027
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPTL. MELTINGS WERE MADE WITH THE BLOWING OF AR, AR-O MIXTS., AND CO GAS INTO THE LADLE TO DET. WHETHER IT IS POSSIBLE TO DECARBURIZE AND REFINE THE MELT. REJECTED ELEC. FURNACE STEEL WAS MELTED IN A 5-TON LADLE. GRAPHS SHOW THE DEPENDENCE OF GAS CONSUMPTION ON PRESSURE FOR VARIOUS POROUS REFRACTORIES; DEPENDENCE OF SP. SURFACE OF GAS AND METAL ON THE BUBBLE DIAM.; IN ADDN., SOME PROPERTIES OF THE REFRACTORY PLUGS ARE TABULATED. SIO SUB2 AND AL SUB2 O SUB3 CONTENTS IN THE SLAG ARE INCREASED AND CAO FALLS. THE EFFECT OF THE METAL BLOW CYCLE WITH GASES ON THE LIFE OF THE REFRACTORY LINING IN THE LADLE NEEDS TO BE DETD. THE C CONTENT OF THE METAL FALLS UNDER THESE CONDITIONS. THE RESULTS SUGGEST WIDE POSSIBILITIES FOR VARIOUS GASES FOR EXTRA FURNACE REFINING OF METAL. FACILITY: ISENT. NAUCH.-ISSLED. INST. CHERN. MET., MOSCOW, USSR.

UNCLASSIFIED

1/2 022 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--CATHODIC HYDRODIMERIZATION OF ACRYLONITRILE TO ADIPONITRILE FOR NYLON 66 -U-

AUTHOR-(03)-TOMILOV, A.P., KLIMOV, V.A., VARSHAVSKIY, S.L,

COUNTRY OF INFO--USSR, SOUTH AMERICA

SOURCE--GER. OFFEN. 1,948,445

DATE PUBLISHED--23APR70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--DIMERIZATION, ACRYLONITRILE, ADIPONITRILE, NYLON, GRAPHITE ELECTRODE, ION EXCHANGE RESIN, COPOLYMERIZATION, STYRENE, BENZENE DERIVATIVE, CATHODE, ELECTRODE REACTION, PATENT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/1061 STEP NO--GY/0000/70/000/000/0000/0000

CIRC ACCESSION NO--AA0116527

UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AA0116527

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NC(CH SUB2) SUB4 CN WAS PREPD. BY ELECTROLYZING CH SUB2 .CHCN IN 2N K SUB3 PO SUB4 EMULSION AT 5 A (0.035 A-CM RPRIME2), 18-20DEGREES, AND PH 8 WITH A MAGNETITE ANODE AND A DOPED GRAPHITE. CATHODE IN 82-93PERCENT CURRENT YIELD. THE POROUS CATHODE WAS IMPREGNATED WITH ION EXCHANGE POLYMER RESINS BY COPOLYMG. STYRENE AND (CH SUB2 :CH) SUB2 C SUB6 H SUB4 WITH BZ SUB2 O SUB2 AND SUBSEQUENT TREATMENT OF THE COPOLYMER WITH (CLCH SUB2) SUB2 O AND SN CHLORIDE (OR CLSO SUB3 H AND DICHLOROETHANE) AND ET SUB3 N OR ET SUB4 NPOSITIVE OHNEGATIVE. FACILITY: UCB UNION CHIMIQUE-CHEMISCHE BEDRIJVEN, S. A.

UNCLASSIFIED

USSR

UDC 539.4:621.81

KLIMOV, V. F.

"Effect of Forces in the Main Turbine Ducts on the Stress-Deformation State of Suspended Transitions"

Tr. Novocherkas. politekhn. in-ta (Works of Novocherkassk Polytechnical Institute), 1971, No. 232, pp 34-39 (from RZh-Mekhanika, No 3, Mar 72, Abstract No 3V1411)

Translation: The effect of a longitudinal force from internal pressure on the stress-deformation state of a suspended turboduct transition for an oil line 920 × 14 mm of St. 3 steel at $l/f = 12$ is investigated. The carrying capacity based on the bending moment in the duct is calculated; the bending moments were determined at quarters of the span and in the middle of the span for different spans from 80 to 230 m and for different load designs. Various recommendations are made for lowering the deformation of a single span hanging transition. The calculation of a transition with restrained pylons is given. B. M. Vysochin.

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USSR UDC 624.072.32

KLIMOV, V.I. and BULYCHEV, L.A.

"Thin-Wall Curved Beams of Variable Cross Section"

Moscow, Prochnost' i Ustoychivost' Tonkostennykh Aviatsionnykh Konstruktsiy, 1971, pp 109-121

Abstract: The article analyzes an elastic thin-wall beam of circular axis and open cross section, which varies continuously along the axis. The beam is subject to nonuniform heating and to nonuniformly distributed forces on its surface.

The solution is based on Lagrange principle of variations.

The mean line of the cross section of the beam is represented by a vector equation (1.1) using curvilinear coordinates shown on fig. 1.

The shear and moments are expressed as functions of deformations. This leads to a system of linear differential equations (3.19).

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KLIMOV, V. I. and BULYCHEV, L. A., Prochnost' i Ustoychivost' Tonkostennykh Aviatsionnykh Konstruktsiy, 1971, pp 109-121

Curvilinear beams of constant cross section, straight thin-wall beams and ring frames are particular cases of the above general solution.

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USSR UDC 539.3

KLIMOV, V.I.

"Thermoelastic Flexible Plates"

Moscow, Prochnost' i Ustoychivost' Tonkostennykh Aviatsionnyh Konstruktsiy, 1971, pp 122-151

Abstract: Stresses and strains in a plate with known external forces and temperature distribution are investigated.

It is shown that in general at the equilibrium condition the total potential energy of the system is minimum.

The specific energy, which is the energy per unit of volume, is expressed by equations (21) and (23). The former refers to the energy of internal forces, the latter to that of the external ones. The total energy is obtained by integrating the specific energy over the volume of the system.

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KLIMOV, V. I., Prochnost' i Ustoychivost' Tonkostennykh Aviatsionnyh Konstruktsiy, 1971, pp 122-151

The general solution is applied to the particular case of a flat plate. The potential energy for this case is expressed by equations (32) and (38). The corresponding stresses are given by equations (66) and (69).

The case of a multilayer plate, various layers having different modulus of elasticity and temperature, is also analyzed. A numerical example is given for a four-layer plate.

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USSR UDC: 624.072.32

KLIMOV, V. I., BULYCHEV, L. A.

"Thin-Walled Curvilinear Rods of Variable Cross Section"

Tr. Mosk. aviats. in-ta (Works of the Moscow Aviation Institute), 1971, vyp. 180, pp 109-121 (from RZh-Mekhanika, No 7, Jul 71, Abstract No 7V782)

Translation: The deformed state of thin-walled rods of variable cross section is considered. External loads are arbitrary, heating is nonstationary, moduli of elasticity of first and second kind are variable with respect to the length and the contour of the rod. The solution is given by the variational method of Lagrange with the hypotheses for a thin-walled rod. Differential equations and formulas are derived for determining the stressed and deformed state of a structural element. Authors' abstract.

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USSR UDC: 621.317.75

AKULOV, Yu. V., ZIBOROV, S. R., KLIMOV, V. P., KRASNOV, L. M., MARIGODOV, V. K.

"Some Problems in Measuring the Amplitude-Frequency and Phase-Frequency Characteristics of Quadripoles"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 2), Novosibirsk, 1970, pp 67-70 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A393)

Translation: The authors point out fundamental difficulties and formulate requirements which must be imposed when designing wide-band two-frequency sweep generators and mixers which are the principal component parts of instruments for measuring the amplitude-frequency and phase-frequency characteristics of quadripoles. A block diagram is given together with a description of the operation of an instrument designed by the authors for measureing the phase-frequency and amplitude-frequency characteristics in the 5-50 MHz range. The instrument has a phase measurement limit of ±90° and a trans-

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AKULOV, YU. V., et al, Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2, 1970, pp 67-70

mission ratio limit of 10 DB. A serially produced F2-1 instrument is used as the low-frequency phase meter in the indicator section. The error in phase measurement is no greater than 2° over the entire working frequency range. E. L.

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USSR UDC: 621.317.75

AKULOV, Yu. V., ZIBOROV, S. R., KLIMOV, V. P., KRASNOV, L. M., MARIGODOV, V. K.

"A Two-Frequency Sweep Generator for Measuring Amplitude-Frequency and Phase-Frequency Characteristics in a Frequency Band"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 2), Novosibirsk, 1970, pp 123-125 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A390)

Translation: The article describes one of the basic modules of an instrument for measuring amplitude-frequency and phase-frequency characteristics. A two-frequency sweep generator with a sweep band from 5 to 50 MHz is designed on the principle of frequency conversion. The complete block diagram of the two-frequency sweep generator is given with enumeration of all modules. The sweep generator is based on two quartz-crystal resonators on a frequency of 57 MHz excited on the fifth mechanical harmonic and used in two corresponding quartz-crystal oscillators. In addition to the frequencies generated by these two oscillators, their beat frequency (difference frequency) is also used. The two-frequency sweep generator was used as

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AKULOV, Yu. V. et al., Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2, pp 123-125

the oscillator module in the above-mentioned instrument for measuring amplitude-frequency and phase-frequency characteristics by the frequency transfer method, giving a phase measurement precision to 3°. One illustration. E. L.

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USSR

KLIMOV, V. S.

"Nontrivial Solutions to Boundary Value Problems for Semi-Linear Elliptical Equations"

Moscow, Izv Akad Nauk SSSR, ser Matematicheskaya, Vol 35, No 2, March-April 1971, pp 428-439

Abstract: This article describes the conditions under which boundary value problems for semilinear elliptical equations have no less than two solutions. The author gives three theorems with lemmas and proof.

Theorem 1. Let the following condition be satisfied: 1. $A-E_0$ is a convergent operator; 2. $F\theta = \theta$, and θ is an isolated fixed point of the vector field $\Phi_0 u = u-A\,Fu$ that is fully continuous in E_1 and whose index $\gamma(\Phi_0, \theta)$ is non-zero; 3. $l(Fu) \leq a\,l(Pu)-b$ for any $u \in E_1$, where $b > 0$, $a \lambda > 1$; 4. For solutions to the family of operator equations

$$u = (1-t)AFu+taAFu \quad (0 \leq t \leq 1)$$

the relationship

$$\|u\|_{E_1} < \psi(\|u\|_{E_0})$$

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KLIMOV, V. S., Izv Akad Nauk SSSR, ser Matematicheskaya, Vol 35, No 2, March-April 1971, pp 428-439

is valii, where $\psi(s)$ is a continuous function. Then the equation $u = Afu$ has at least one non-zero solution. Theorem 2. Let there exist, satisfying the inequality $\varphi(x) \geq k\rho_s(x)$, a supereigenfunction $\varphi(x)$ of the operation M^+ under the boundary conditions

$$B_j^+ v = 0 \quad (j = 1, \ldots, m), \tag{7}$$

Then the operator A, which is determined by the equation

$$u(x) = Af(x), \tag{6}$$

is E_0-convergent, and as E_0 we can take the space $W_p^{r_m}$, where p is any number from the interval $[1, \frac{n}{n-1}]$. Theorem 3. Let the function $F(x,u,\ldots,D_x^{2m-1}u)$ satisfy the conditions:

$$1. \quad F(x,u,\ldots,D_x^{2m-1}u) \geq a|u| - b, \tag{33}$$

$$2. \quad F(x,u,\ldots,D_x^{2m-1}u) \leq K(u,\ldots,D_x^{r_m-n}u)$$

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KLIMOV, V. S., Izv Akad Nauk SSSR, ser Matematicheskaya, Vol 35, No 2, March-April 1971, pp 428-439

$$\left(1 + \sum_{i > r_m - n} | D^i u |^{p_i} \right), \qquad (34)$$

where $b > 0$, a $\lambda > 1$, K is a continuous function, $p_i(i-1-r_m+n) < 2m-1-r_m+n$. Then the boundary value problem

$$Mu = F(x, u, \ldots, D_x^{2m-1} u) \quad (x \in \Omega), \qquad (1)$$

$$B_j u = 0 \quad (x \in \Gamma, \ j = 1, \ldots, m), \qquad (2)$$

has a non-zero solution $u(x) \in C^{2m+\beta}(\Omega)$. The article contains 34 numbered equations and 12 bibliographic citations.

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USSR UDC 517.946

KLIMOV, V. S.

"Non-Negative Solutions to Boundary Value Problems for Elliptical Second-Order Equations"

Moscow, Sibirskiy Matematicheskiy Zhurnal, Vol 12, No 4, Jul/Aug 71, pp 718-726

Abstract: The author studies homogeneous boundary value problems for the equation Lu = F(x,u, grad u), where L is a second-order linear elliptical operator. He assumes that the boundary value problems examined have trivial solutions. He investigates the question of the existence of non-negative and non-zero solutions to the Neumann problem. In the case of the Neumann problem the conditions for existence of a non-zero solution, to some degree, are less strict than in the case of the Dirichlet problem. The author cites the criteria for non-negativity of the Green function of the operator L for the first and second boundary value problem. The results obtained in this case may be assumed as a direct generalization of the well-known results pertaining to ordinary differential equations. The problem posed by the author is proven through the use of theorems and lemmas which he cites in some detail through equations. The article contains 9 bibliographic entries.
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USSR

KLIMOV, V. S. (Novocherkassk Polytechnical Institute)

"Nonzero Solutions of Boundary Value Problems"

Minsk, Differentsial'nyye Uravneniya; May 1971, pp 807-813

Abstract: The author studies the question of the existence of nonzero solutions of the differential equation $Lx = p_n(t)x^{(n)} + p_{n-1}(t)x^{(n-1)} + \ldots + p_0(t)\,x = f(t, x, \ldots, x^{(n-1)})$ satisfying the linear homogeneous boundary conditions ${}_1x = {}_2x = \ldots = {}_nx = 0$. Indicated, in particular, are new conditions for the existence of nontrivial solutions of a multipoint boundary value problem.

Two theorems are proven. The article includes 24 equations. There are 12 references.

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USSR UDC 621.315.61.537.226

DIDKOVSKAYA, O. S., SAVENKOVA, G. Ye., KLIMOV, V. V., VENEVTSEV, Yu. N.

"A Piezoceramic Material"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 23, Aug 71, Author's Certificate No 310310, Division H, filed 8 Dec 69, published 26 Jul 71, p 167

Translation: This Author's Certificate introduces a piezoceramic material based on solid solutions of $Pb(Zr_xTi_{1-x})O_3$ with $x = 0.4$-0.6 with the addition of 0.5-5 mol.% Bi_2O_3 and 0.25-10 mol.% Li_2O. As a distinguishing feature of the patent, the sintering temperature is reduced and the dielectric and piezoelectric properties of the material are improved by adding 0.25-3.0 Mol.% Nb_2O_5.

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USSR UDC 666.638

SAVENKOVA, G. Ye., DIDKOVSKAYA, O. S., KLIMOV, V. V., VENEVTSEV, Yu. N.

"A Piezoceramic Material"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 23, Aug 71, Author's Certificate No 310354, Division H, filed 3 Mar 70, published 26 Jul 71, p 177

Translation: This Author's Certificate introduces a piezoceramic material based on lead zirconate-titanate solid solutions containing an additive in the form of a mixture of oxides of tungsten and one of the bivalent elements. As a distinguishing feature of the patent, the sintering temperature of the material is reduced by using the above-mentioned additive in the form of tungsten oxide in amounts of 0.3-3.5 mol.%, oxide of one of the bivalent elements (Sr, Ca, Zn, Ba) in amounts of 1.0-10 mol.%, and by the addition of bismuth trioxide in amounts of 0.25-5 mol.%.

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/2 021 UNCLASSIFIED PROCESSING DATE--16OCT70
TLE--NONLINEAR CERAMIC DIELECTRIC -U-

THOR-(05)-DIDKOVSKAYA, O.S., ZHABKINA, G.I., BRONNIKOV, A.N., SHVORNEVA, L.I., KLIMOV, V.V.
UNTRY OF INFO--USSR

URCE--U.S.S.R. 262,201

FERENCE--OTKRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
TE PUBLISHED--26JAN70

BJECT AREAS--MATERIALS

PIC TAGS--PATENT, CERAMIC DIELECTRIC, NONLINEAR SYSTEM, LEAD, TITANATE, STRONTIUM, ZINC OXIDE, CALCIUM

NTROL MARKING--NO RESTRICTIONS

CUMENT CLASS--UNCLASSIFIED
OXY REEL/FRAME--1990/1784 STEP NO--UR/0402/70/000/000/0000/0000

RC ACCESSION NO--AA0109745

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--16OCT70

/2 021

RC ACCESSION NO--AA0109745

STRACT/EXTRACT--(U) GP-0- ABSTRACT. FROM OTDRYTIYA, IZOBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970, 47(6), 42. THE TITLE DIELEC. CONTAINS A SOLID SOLN. OF A PB TITANATE AND SR TITANATE, 1-30 MOLE PERCENT ZN OXIDE (OR TITANATE) AND SMALLER THAN 45 MOLE PERCENT CA TITANATE.

USSR UDC: 681.326.3

ZHUKOV-YEMEL'YANOV, O. D., FILIMONOV, Ye. A., KOKHANOV, Yu. A., KLIMOV, V. V.

"A Device for Controlling a Modular Primary Memory Unit"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 31, 1970, Soviet Patent No 283685, Class 42, filed 18 Aug 69, p 138

Abstract: This Author's Certificate introduces a device for controlling a modular primary memory unit. The device contains a circuit for commutating the lines of the primary memory unit, comparison circuits, control circuits, an analysis circuit, and a demand priority circuit. As a distinguishing feature of the patent, speed is increased by adding a block of tags for unsatisfied demands, a store of controlling words for the primary memory unit, and a selection circuit for the release register of the control word store. The control circuit for the block of tags for unsatisfied demands is connected to the circuit for analyzing demand words from the channels and the central computer. The controlling inputs of this analysis circuit are connected to the circuit for priority of demands from the channels and the central computer. The circuit for controlling selection from the block of tags for unsatisfied demands is connected by its first output to the control inputs of the circuit for priority of demands from the channels and the cen-

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tral computer, while its second output is connected by the controlling inputs to the first inputs of the registers of the **store** of controlling words of the primary memory unit. The first group of inputs of the circuit for control of selection from the block of tags of unsatisfied demands is connected to the outputs of the circuits which shape the signals for the end of the cycle of the modules in the primary memory. The second group of inputs is connected to the first outputs of the registers of the block of tags for unsatisfied demands, and the third group of inputs is connected to the outputs of the first comparison circuit. The circuit for control of the block of tags for unsatisfied demands is connected by the controlling inputs to the first register of the block of tags for unsatisfied demands and to the circuit for priority of demands from the channels and the central computer. The second outputs of the registers of the block of tags for unsatisfied demands are connected to the inputs of the first comparison circuit. Connected to the auxiliary input of the comparison circuit is the first output of the circuit for selecting the register of the **store** of controlling words for the primary memory. The second output of this circuit is connected to the circuit for control of selection from the primary memory and the distribution of readout data, and its inputs are connected to the first outputs of the registers of the **store** of controlling words of the primary memory. The second outputs of the **store** are connected to the inputs of the second com-

parison circuit, the auxiliary input of this comparison circuit being connected to the circuit for analysis of demand words from the channels and the central computer. This analysis circuit is also connected to the first input of the second comparison circuit and to the first and second inputs of the circuit for control of the store of controlling words of the primary memory unit. The outputs of this control circuit are connected to the second inputs of the registers of the store of controlling words of the primary memory unit, to the circuit for commutating the lines of the primary memory unit, and to the circuit for priority of demands from the channels and the central computer.

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1/2 020 UNCLASSIFIED PROCESSING DATE--18SEP70

TITLE--EFFECT OF LITHIUM OXIDE ON THE PROPERTIES OF A SERIES OF FERROELECTRIC MATERIALS -U-

AUTHOR-(03)-KLIMOV, V.V., DIDKOVSKAYA, O.S., ZVONIK, V.A.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(1) 182-3

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--FERROELECTRIC MATERIAL, LITHIUM OXIDE, PIEZOELECTRIC MATERIAL, ABRIUM TITANATE, DIELECTRIC CONSTANT

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1986/0258 STEP NO--UR/0363/70/006/001/0182/0183

CIRC ACCESSION NO--AP0102308

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0102308

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF LI SUB2 O ADDNS. ON SINTERING AND PROPERTIES OF TIO SUB2 AND SEVERAL TITANATES WITH THE PEROVSKITE STRUCTURE WAS EXAMD. THE SAMPLES TO BE STUDIED WERE PREPD. BY CONVENTIONAL CERAMIC TECHNOLOGY BY FIRING TWICE MIXTS. OF TIO SUB2, LI SUB2 CO SUB3, BACO SUB3, PBCO SUB3, FE SUB2 O SUB3, AND NB SUB2 O SUB3. THE FIRING TEMP. WAS VARIED OVER A BROAD RANGE AS A FUNCTION OF THE COMPN. THE SHRINKAGE COEFF. OF TIO SUB2 WITHOUT ADDNS. IS SIGNIFICANTLY LOWER THAN THAT WITH LI SUB2 O ADDN. THE MAX. SHRINKAGE WAS OBSD. AT 1000 TO 1200DEGREES. SMALL LI SUB2 O ADDNS. ALSO CHANGE THE CHEM. PROPERTIES OF TIO SUB2 SIGNIFICANTLY, IN PARTICULAR ITS REACTIVITY. THE EFFECT OF LI SUB2 O ADDNS. ON THE ELECTROPHYS. PROPERTIES OF BATIO SUB3, AS WELL AS OF SOLID SOLNS. OF THE SYSTEM PBTIO SUB3 NEGATIVE PB(FE SUBONE HALF NB SUBONE HALF)O SUB3, WAS INVESTIGATED. IN THE LATTER SYSTEM, A CONTINUOUS SERIES OF SOLID SOLNS. IS FORMED. AT SIMILAR TO 93 MOL. PERCENT PB(FE SUBONE HALF NB SUBONE HALF)O SUB3, THE TETRAGONAL MODIFICATION CHANGES INTO THE RHOMBOHEDRAL PHASE, AND THE COMPNS. CLOSE TO THE MORPHOTROPIC BOUNDARY HAVE HIGH VALUES OF PIEZOELEC. PARAMETERS. HOWEVER, WITHOUT MODIFYING ADDITIVES, THESE SOLID SOLNS. HAVE A RELATIVELY HIGH COND. AND POLARIZE POORLY, WHICH MAKES THEIR INVESTIGATION AND APPLICATION DIFFICULT. ADDNS. OF LI SUB2 O ENHANCE A MARKED DECREASE IN COND. THIS DECREASE IN COND. IMPROVES THE POLARIZATION CONDITIONS OF THE CERAMIC, AS A RESULT OF WHICH PIEZOELEC. MATERIALS WITH HIGH VALUES OF THE PIEZOELEC. MODULUS, ELECTROMECH. COUPLING COEFF., AND DIELEC. CONST. ARE OBTAINED.

UNCLASSIFIED

1/2 017 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--PIEZOCERAMICS BASED ON LEAD ZIRCONATE TITANATE WITH COMPLEX ADDITIVES CONTAINING GERMANIUM -U-

AUTHOR-(03)-DIDKOVSKAYA, O.S., KLIMOV, V.V., VENEVTSEV, YU.N.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(3), 606-7

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--GERMANIUM CONTAINING ALLOY, ZIRCONATE, TITANATE, PIEZOELECTRIC CERAMIC

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/1511 STEP NO--UR/0363/70/006/003/0606/0607

CIRC ACCESSION NO--AP0120292

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0120292

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. RESULTS ARE GIVEN OF THE STUDY OF THE EFFECT OF ADDNS. BI(B SUBONE HALF PRIME2 POSITIVE GE SUBONE HALF) O SUB3 (WHERE B PRIME2 POSITIVE EQUALS BA PRIME2 POSITIVE, SR PRIME2 POSITIVE, CA PRIME2 POSITIVE, MG PRIME2 POSITIVE, AND CU PRIME2 POSITIVE) ON THE SINTERING AND THE PROPERTIES OF PBTIO SUB3 PBZRO SUB3 SOLID SOLNS. NEAR THE MORPHOTROPIC TETRAGONAL RHOMBOHEDRAL BOUNDARY. THE SAMPLES STUDIED WERE PREPD. BY CONVENTIONAL CERAMIC TECHNOLOGY BE TWO TIME FIRING AT 800DEGREES FOR 2 HR AND AT 1000-1050DEGREES FOR 1.5 HR. X RAY DIFFRACTION STUDIES SHOWED THAT THE POSITION OF THE MORPHOTROPIC TETRAGONAL RHOMBOHEDRAL BOUNDARY WITH THE INTRODUCTION OF THE ADDNS. IS SHIFTED TOWARDS THE SIDE OF THE TETRAGONAL REGION. THE BEST CHARACTERISTICS IN THE CASE OF A 2PERCENT ADDN. ARE SHOWN BY COMPNS. WITH THE RATIO (ZR PRIME4 POSITIVE):(TI PRIME4 POSITIVE) EQUALS 52:48. THE PROPERTIES OF A NO. OF THE PREPD. MATERIALS ARE TABULATED. THE PROPERTIES OF THE SOLID SOLNS. PREPD. WERE INVESTIGATED AS A FUNCTION OF THE TEMP. AS WELL AS IN STRONGLY VARIABLE FIELDS. TEMP. DEPENDENCE OF DIELEC. PERMEABILITY WAS DETD. INVESTIGATION OF THE TEMP. DEPENDENCE OF THE COEFF. OF THE ELECTROMECH. BOND AND OF THE PIEZOMODULUS SHOWED THAT THE RESULTS OBTAINED DIFFER BUT LITTLE FROM THE TEMP. DEPENDENCES OF THESE PARAMETERS FOR KNOWN MATERIALS BASED ON PBTIO SUB3 PBZRO SUB3.

UNCLASSIFIED

USSR UDC 621.311.21:621.221.4.001.1

KAROL', L. A., KLIMOV, V. Ye.

"Determination of the Types of Power Plants Producing Power to Charge a Pumped-storage Power Plant"

Tr. Mosk. Energ. In-ta [Works of Moscow Institute of Power Engineering], 1972, No 109, ;; 78-82 (Translated from Referativnyy Zhurnal Elektrotekhnika i Energetika, No 9, 1972, Abstract No 9Ye107, by V. S. Emma)

Translation: The influence of the selection of the type of power plant used to charge a pumped-storage power plant on its fuel effect is studied. In summer, no mode difficulties appear at night and the additional output of the condensation power plant is used for charging. Unloading of a heat and electric power plant with duplication of heat supply is economically more favorable than unloading of nuclear power plants, i.e., the PSPP is charged by further loading of the power units at the heat and power plant and by firing up units and boilers shut down for the night. It is difficult to take changes in the composition of equipment in service into consideration during planning. It is recommended that the summary characteristic of relative increments from the heat and electric power plants in the power system be used to determine the fuel consumption required to charge the PSPP. Three biblio. refs.

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UDC 629.7.03:534.11

KLIMOV, Yu. M.

"Investigation and Calculation of Oscillations of the Turning Rotor With Accounting for Clearances in the Supports"

Kazan', Izvestiya Vysshikh Uchebnykh Zavedeniy, Aviatsionnaya Tekhnika, No 2, 1973, pp 46-52

Abstract: A study was made of the calculation problem of non-linear oscillations of elastically-deformable rotors of compressors of gas turbine engines and turbine-pump assemblies with accounting for clearances in the supports. Equations of constrained oscillations of the rotor were derived. A suggested analytical approximation method of their solutions is compared with the exact method. Theoretical and experimental investigation results are presented of the effects of the magnitude of clearances and of the unstableness of the rotor on the excitation of parametric oscillations. Recommendations are given for the elimination of dangerous resonances and for the increase of the reliability of engines. Calculation results of an experimental rotor and experimental dependences of cross-sectional oscillation amplitudes on the revolutions of a wall with a disc in the middle are shown. Dangerous

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KLIMOV, Yu. M., Izvestiya Vysshikh Uchebnykh Zavedeniy, Aviatsionnaya Tekhnika, No 2, 1973, pp 46-52

resonances can be avoided by selection of clearances and by the balancing of rotors when running. Five figures, sixteen formulas, six bibliographic references.

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1/2 014 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--ATTEMPT TO USE MATHEMATICAL METHODS IN THE INVESTIGATION OF THE STRENGTH OF PRECIPITATES -U-

AUTHOR-(02)-KLIMOV, YU.M., MITIN, B.A.

K

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. MATHEMATICAL METHODS OF PLANNING EXPERIMENTS AND DATA PROCESSING HAVE BEEN USED FOR THE INVESTIGATION OF THE STRUCTURE STRENGTH OF PRECIPITATES FORMED AFTER TREATMENT OF MUDDY WATERS WITH ALUMINUM SULFATE WITH THE USE OF FLOCCULANTS OF THE POLYACRYLAMIDE TYPE. FACILITY: N-I I PROYEKTNYY INSTITUT STROITEL'NYKH MATERIALOV, CHELYABINSK.

UNCLASSIFIED

USSR

KLIMOVA, D. N., OGURTSOV, K. I., Leningrad

"On the Conditions of Applicability of Quasistatic Solutions in the Case of Dynamic Effects on the Boundary of an Elastic Half-Space"

Moscow, Mekhanika Tverdogo Tela, No 6, Nov/Dec 70, pp 84-89

Abstract: Formulas are derived for making calculations and accounting for the difference between the values of the dynamic and quasistatic field in the center of a source for dynamic effects of various types of distribution. This gives a basis for determining the permissible error in cases where approximate quasistatic solutions (static solutions with parametric dependence on time) of dynamic problems are used instead of exact solutions for studying the elastic field close to a source when the surface of a body is subjected to dynamic effects of the shock or explosion type. Estimates of errors outside the source, at the boundary, and in the half-space are also discussed.

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USSR UDC: 512.35/.26+519.3:330.115

KLIMOVA, E. T.

"Mathematical Models of Assignments"

V sb. Vopr. planir. i upr. nauch. issled. (Problems of Planning and Control in Scientific Research--collection of works), Moscow, 1971, No 3, pp 21-25 (from RZh-Kibernetika, No 12, Dec 71, Abstract No 12V800)

Translation: A review of various formulations of problems of the assignment type. Bibliography of eleven titles.